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ABSTRACT

This booklet describes the Preparing Future Faculty (PFF) Program which is a nationwide program aiming to increase the educational quality of undergraduate science and mathematics education through aspiring doctoral students to the professorate. PFF is a multidisciplinary program involving doctoral degree-granting institutions and partners. The core features of the program include clusters, addressing faculty roles and responsibilities, and mentoring to doctoral students and providing feedback. (YDS)

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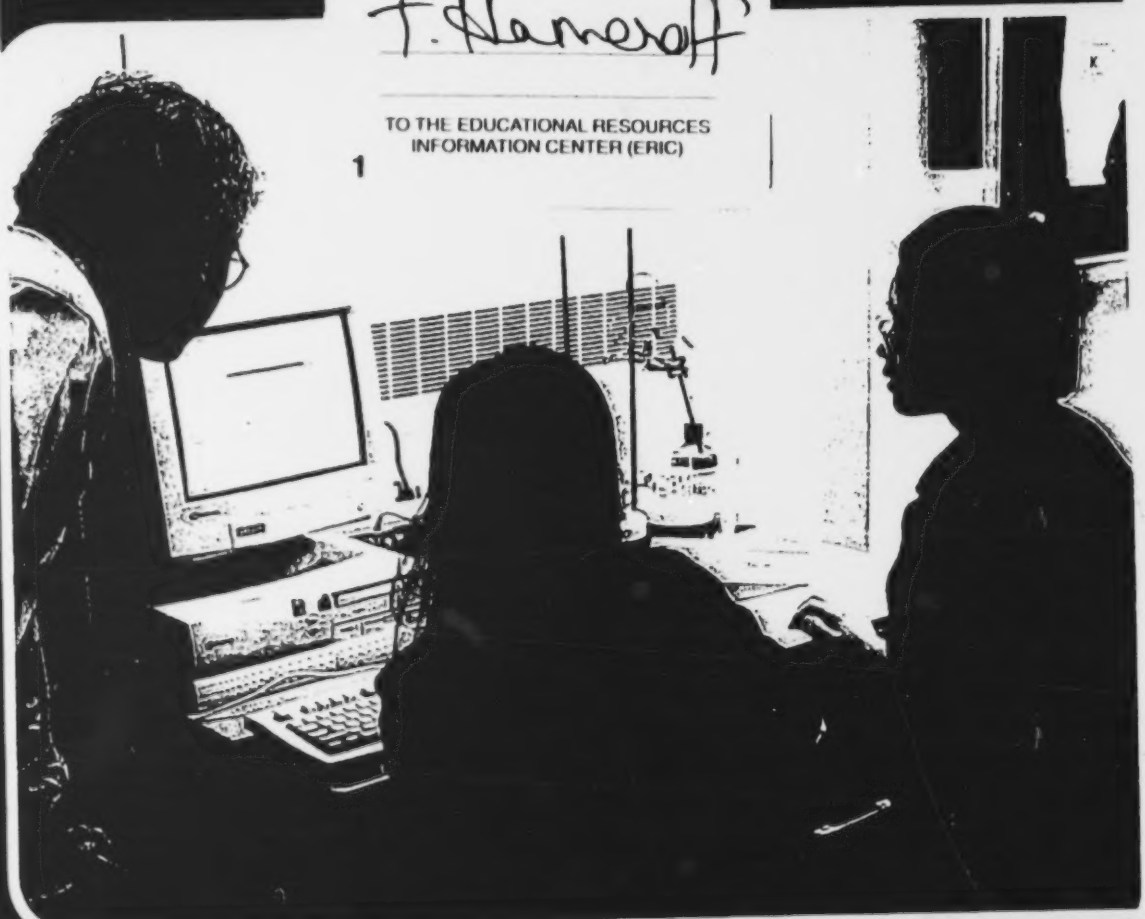

Preparing Future Chemistry Faculty

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The American Chemical Society is participating in a nation-wide program to enhance the preparation of doctoral students for faculty careers called Preparing Future Faculty (PFF). PFF works to improve the quality of undergraduate education in math and in sciences by restructuring the preparation of doctoral students aspiring to the professoriate.

PFF is sponsored by the Council of Graduate Schools and the Association of American Colleges and Universities, with support from the Pew Charitable Trusts, the National Science Foundation, and a private donor.

Preparing Future Chemistry Faculty

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What Is the PFF Program?

The PFF program is a multidisciplinary program involving 43 doctoral degree-granting institutions and more than 250 partner institutions. Built in the spirit of partnership and cooperation, PFF programs work to transform the way aspiring faculty members are prepared for their careers. PFF focuses on the full range of faculty roles and responsibilities subsumed by the terms teaching, research, and service. A PFF program provides doctoral students with opportunities to observe and experience faculty responsibilities at a variety of academic institutions with varying missions, diverse student bodies, and different expectations for faculty.

National PFF programs have three core features. Most essential is the *cluster*: an anchor, doctoral degree-granting institution or department collaborating with various *partner institutions* or departments. The cluster is guided by a steering committee that determines what is needed by future faculty and determines the direction of the PFF program. The committee includes representatives from each partner institution, and these representatives must have equal voices in leadership of the program. Second, the PFF program must address the full scope of faculty roles and responsibilities that include teaching, research, and service, emphasizing how the expectations for these responsibilities are often quite different in different campus settings. And third, participating doctoral students should have multiple mentors and receive reflective feedback not only for their research activities but also for their teaching and service activities.

Preparing Future Chemistry Faculty

The ACS awarded funds to five doctoral degree-granting departments to serve as lead institutions for a consortium of two- and four-year colleges and universities in which doctoral students can gain on-site faculty experience in a variety of venues in addition to where they are earning their Ph.D. The selected chemistry programs are located at the following five institutions: Duquesne University (PA), Queens College of the City University of New York, University of California at Los Angeles, University of Massachusetts at Amherst, and University of Michigan at Ann Arbor. For more information and links to the Preparing Future Chemistry Faculty programs, visit the ACS Web site at www.acs.org/education/student/pffweb.html. In addition, the ACS College Chemistry Consultants Service (C_3S) can provide consultants who have been trained to help departments add PFF activities to their curriculum. C_3S is the resource for professional assistance with the many complex issues facing the chemistry departments. More information about C_3S service can be found on the ACS Web site at www.acs.org/education/institutional/c3s.html.

What Makes PFF So Valuable?

The Association of American Colleges and Universities and the Council of Graduate Schools established the PFF Program in 1993 to address the disconnect between doctoral education and the needs of colleges and universities that employ new Ph.D.s. The traditional Ph.D. in chemistry usually prepares individuals for careers in basic research. The degree does not typically prepare these highly skilled research professionals to be faculty members. Although many chemistry graduate pro-

grams require teaching experience, this is most often provided in the form of a teaching assistantship, a position in which the graduate student does not always gain experience in critical areas such as syllabus preparation, exam preparation, and lecture techniques. Academic employers, however, increasingly expect new faculty to be excellent teachers. More and more new faculty need collaboration skills and an awareness of how an educational program as a whole contributes to overall student growth. Also, they are expected to render professional service and engage in shared governance. The changing expectations for faculty members tend not to be reflected in most doctoral programs.

Main components of the typical PFF program include

1. **Partner Institutions**
   Doctoral students learn about the academic profession through exposure to the full range of professional responsibilities in a variety of academic institutions—such as liberal arts colleges, comprehensive universities, and community colleges—that may become their professional homes. Becoming aware of the variety of institutions in U.S. higher education enables future faculty to find an appropriate fit between their own interests and competencies and the needs of institutions.

2. **Mentoring**
   PFF programs include a formalized system of mentoring in all aspects of professional development. Just as doctoral students have a mentor to guide their research, they also need guidance as they develop their teaching and service repertoire. Indeed, students benefit from multiple mentors. A mentor may be at a different institution, perhaps one

with a mission that gives high priority to the teaching and service responsibilities of its faculty.

3. **Diversity among Students**
   PFF participation prepares future faculty for the diversity they will see in their future classrooms. Future faculty will need to be more competent in understanding and addressing issues presented by the differences in learning styles and backgrounds. They also need to be more sophisticated in their use of newer collaborative and experiential approaches to teaching and learning, methods that research has shown to be more effective with today's students.

4. **Integration into Sequence of Degree Requirements**
   Academic departments that have subscribed to PFF are integrating professional development experiences into the existing academic program. Future faculty are given progressively complex assignments, more responsibility, and recognition associated with increased professional capacities. Progressive assignments allow future faculty to build skills and gain confidence in their knowledge and professional growth. The aim is to avoid lengthening time to degree.

5. **More Than a Teaching Development Program**
   PFF is consistent with the best practices of teaching assistant development. These assistant development programs are valuable in supporting certain faculty roles and in teaching new pedagogies; PFF programs broaden the preparation by including teaching experience at different institutions, stressing professional service and governance responsibilities of various sorts, and providing faculty mentors for these roles.

Current Activities of Chemistry Clusters

Working in clusters of institutions and departments and in response to local opportunities, PFF programs have developed a wide range of activities. Each cluster is encouraged to develop its own program and to include activities in three areas: in individual departments, across the university, and on partner campuses. Some programs require relatively short time commitments, such as attending a series of seminars over the course of the academic year. Others are more extensive and require enrollment in courses, weekend activities, and routine travel to another campus.

Examples of PFF activities at the departmental level include

- forums for faculty members from different institutions to describe and reflect on their professional lives;
- forums for doctoral alumni to talk about how their careers connect with their graduate program;
- courses on teaching in the discipline and in a multicultural setting;
- seminars and forums on professional issues, such as the tenure process and faculty governance issues;
- revision of doctoral program guidelines to provide PFF experiences for students planning academic careers; and
- support for graduate students attending professional meetings and making presentations with faculty.

Examples of campus-wide PFF activities include

- seminars on topics in college teaching and professional and career issues (often taught by faculty and administrators from different institutions and held on different campuses);

- reviewing academic governance systems and inviting graduate students to attend faculty meetings or committee meetings; and
- workshops on developing portfolios documenting expertise in teaching, research, and service.

On partner campuses, graduate students can

- learn about distinctive institutional missions and different academic cultures;
- work with a teaching and/or service mentor;
- teach a unit and/or an entire course and receive feedback from their mentors;
- attend faculty, committee, or departmental meetings and discuss their interpretations;
- shadow professors or academic administrators and review the activities observed;
- share the graduate school experience with undergraduate students; and
- participate in faculty development activities.

How Does PFF Benefit Doctoral Student Participants?

The PFF national office conducted program-wide surveys of doctoral students in PFF programs during the spring of 1995 and again in 1996. When asked whether they would recommend PFF to other doctoral students, 99% of the students said yes. The top four benefits of participation graduate students cited were that PFF

1. strengthened understanding of faculty roles and their interest in an academic career,
2. broadened their awareness of diverse institutions,
3. enhanced their ability to compete in the job market, and
4. assisted them in understanding the job search process.

As PFF graduates have taken academic positions, their experiences as new faculty continue to provide anecdotal evidence suggesting that they are better prepared than many of their colleagues to meet the expectations for new faculty at their institutions.

The changes precipitated by PFF programs constitute a win-win-win strategy:

- better preparation for the doctoral students,
- better faculty candidates for the colleges and universities that hire them, and
- stronger, more engaging programs for doctoral degree-granting departments.

Here's What Chemistry Graduate Students Are Saying

"My initial expectation from PFF was to acquire the information and a sense of what being a faculty member would be like. The program has definitely been worth my time. I will now be able to make a more informed decision when I choose my career, and I am being equipped with crucial information that will help me to avoid making common mistakes when in an early academic career."

"PFF meetings also allow the graduate students to speak with and relate to some of the faculty at a much more personal level."

"Our biweekly meetings are extremely worthwhile. It is one of the only venues where faculty and students come together to discuss issues related to being faculty members."

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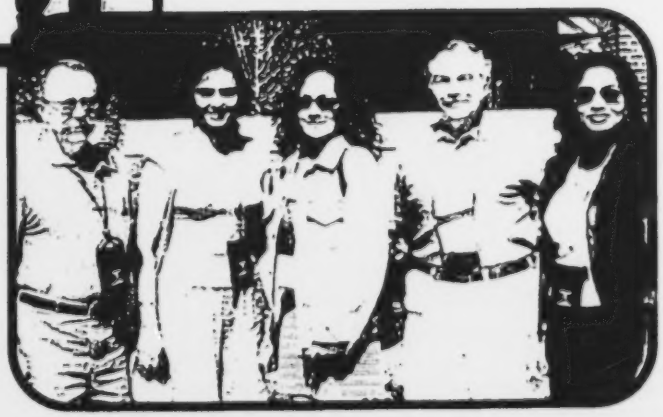
For more information about the Preparing Future Chemistry Faculty program or ordering copies of this brochure, visit the ACS Web site at **www.acs.org/education/student/pffweb.html.**

More information about the National PFF programs and various other resources can be found on the PFF Web site at **www.preparing-faculty.org.**

Sponsors

A joint undertaking of the Association of American Colleges and Universities (AAC&U) and the Council of Graduate Schools (CGS), PFF is supported by the National Science Foundation, the Pew Charitable Trusts, and a private donor. It was designed, first, to develop alternative models of faculty preparation (1993-1997) and then to institutionalize them (1997-2001). A third phase (1998-2001) was launched to develop model programs in science and mathematics departments in collaboration with the American Association of Physics Teachers, the American Chemical Society, the American Mathematical Society, the Mathematical Association of America, and the Special Interest Group on Computer Science Education/ACM. In November 1999, another PFF initiative was undertaken to develop model programs in social sciences and humanities departments in collaboration with the American Historical Association, the American Political Science Association, the American Psychological Association, the American Sociological Association, the National Communication Association, and the National Council of Teachers of English. Currently, an independent assessment of the impact of PFF programs on the success of faculty members in their early careers is being conducted.



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